

Claims

1. A method for detecting the activity of P2Y₁₅ in a sample comprising the steps of:

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- a) incubating a sample comprising P2Y₁₅ and a ligand under conditions which allow binding of P2Y₁₅ and the ligand, and
- b) detecting a second messenger, wherein said ligand is AMP or adenosine receptor ligand.

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2. The method of claim 1 further comprising the steps of:

- a) incubating a second sample comprising P2Y₁₅ in the absence of the ligand under conditions which allow binding of P2Y₁₅ and the ligand, and
- b) detecting a second messenger.

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3. The method of claim 1 wherein said sample comprises cells expressing P2Y₁₅.

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4. The method of claim 1 wherein said sample comprises cell membranes bearing P2Y₁₅.

5. A method of screening for an agent to modulate P2Y₁₅ activity using cells expressing P2Y₁₅, said method comprising:

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- a) incubating a first sample of said cells in the presence of said agent and a second sample of said cells in the absence of said agent, both said samples under conditions which allow binding of AMP or adenosine receptor ligand to P2Y₁₅;

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- b) detecting a signalling activity of P2Y15 polypeptide in said first and second samples, and
- c) comparing the results of said second messenger assays for said first and second samples.

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6. A method of screening for an agent to modulate P2Y15 activity using cell membranes bearing P2Y15, said method comprising:

- a) incubating a first sample of said cell membranes in the presence of said agent and a second sample of said cell membranes in the absence of said agent, both said samples under conditions which allow binding of AMP or adenosine receptor ligand to P2Y15;
- b) detecting a signalling activity of P2Y15 polypeptide in said first and second samples, and
- c) comparing the results of said second messenger assays for said first and second samples.

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7. A method for determining if a test compound increases or decreases the activity of P2Y15 using cells expressing P2Y15, said method comprising:

- a) incubating a first sample of said cells in the presence of said test compound and a second sample of said cells in the absence of said test compound, both said samples under conditions which permit binding of AMP or adenosine receptor ligand to P2Y15;
- b) detecting a signalling activity of P2Y15 polypeptide in said first and second samples, and
- c) comparing the results of said second messenger assays for said first and second samples.

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8. A method for determining if a test compound increases or decreases the activity of P2Y15 using cell membranes bearing P2Y15, said method comprising:
- 5 a) incubating a first sample of said cell membranes in the presence of said test compound and a second sample of said cell membranes in the absence of said test compound, both said samples under conditions which permit binding of AMP or adenosine receptor ligand to P2Y15;
- 10 b) detecting a signalling activity of P2Y15 polypeptide in said first and second samples, and
- c) comparing the results of said second messenger assays for said first and second samples.
9. A method of identifying an agent that modulates the function of P2Y15, said method comprising:
- 15 a) contacting a P2Y15 polypeptide in the presence and absence of an agent under conditions permitting the binding of said AMP or adenosine receptor ligand to said P2Y15 polypeptide; and
- 20 b) measuring the binding of said P2Y15 polypeptide to said agent, relative to the binding in the absence of said agent, wherein an agent which changes binding is identified as a potential therapeutic agent for decreasing or increasing the function of P2Y15.
- 25 10. The method of claim 9 wherein said measuring is performed using a method selected from label displacement, surface plasmon resonance, fluorescence resonance energy transfer, fluorescence quenching, and fluorescence polarization.
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11. The method of any one of claims 5 to 10 wherein said agent is selected from the group consisting of a natural or synthetic peptide, a polypeptide, an antibody or antigen-binding fragment thereof, a lipid, a carbohydrate, a nucleic acid, and a small organic molecule.
- 5 12. The method of any one of claims 5 to 10 wherein said step of measuring a signalling activity of said P2Y15 polypeptide comprises detecting a change in the level of a second messenger.
- 10 13. The method of either of claims 5 to 10 wherein the step of detecting a signalling activity comprises measurement of guanine nucleotide binding or exchange, adenylate cyclase activity, cAMP, protein kinase C activity, phosphatidylinositol breakdown, diacylglycerol, inositol triphosphate, intracellular calcium, arachinoid acid concentration, MAP kinase activity, tyrosine kinase activity, reporter gene expression.
- 15 14. A reagent that modulates the activity of a P2Y15 polypeptide or polynucleotide, wherein said reagent is identified by the method of any of the claims 1 to 13.
- 20 15. A pharmaceutical composition, comprising:
the reagent of claim 14, and a pharmaceutically acceptable carrier.
16. Use of the reagent of claim 14 in the preparation of a medicament for
25 modulating the activity of P2Y15 in a disease.
17. Use of claim 16, wherein the disease is a disease related to kidney function, disease related to mast cells, upper respiratory and oral disease, or allergic or inflammatory disease.
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18. Use of claim 16, wherein the disease is one selected from the group consisting of asthma, COPD, congestive heart failure, high blood pressure, edema, cirrhosis of the liver, nephrotic syndrome, mast cell hyperplasia in the skin (mastocytosis), urticaria, flushing, single mastocytomas, multiple cutaneous lesions of urticaria pigmentosa, inflammatory bowel diseases, parasitic infections, cutaneous neurofibromas, benign and malignant breast lesions, urge incontinence, overactive bladder, Sjogren's syndrome, dry mouth, dental carries, post-nasal drip, and cough.
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